
MicroVision®

Introduction to MVIS ROS DRIVER nodes

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Version History

Date	Version	Changes
Feb-06-2025	1.0	Initial Version of this manual
Apr-29-2025	1.2	Movia L Image; ROS path corrections

Table 0.1: Version History

Contents

1 Introduction

This document explains the general usage of the MVIS ROS DRIVER nodes and how they can be adapted.
The MVIS ROS driver nodes are available for ROS and ROS2.
Please read the appendix if you experience problems.

2 Prerequisites

Before building the ROS and ROS2 driver nodes ROS has to be installed and working on your system. Try building one of the ROS tutorials first.

3 ROS Driver

This MOVIA driver package contains ROS and ROS2 **movia** nodes to integrate a MOVIA-sensor into an existing ROS or ROS2 environment.

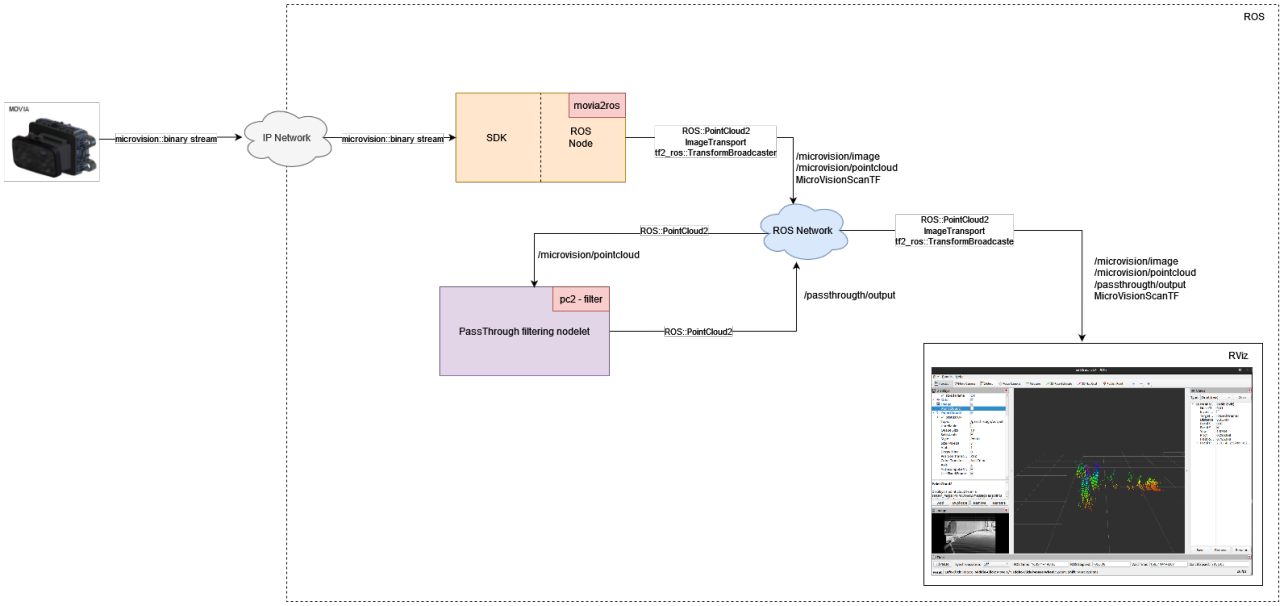

Figure 3.1: movia_driver package integration

Binary stream of a connected MOVIA device is converted by SDK into a public known datatype which is converted by this movia driver node in a second step into ROS standard datatype PointCloud2. For MOVIA L only UDP is used and Scan2342 is received from the sensor instead of raw LDMI. Also intensity images are received.

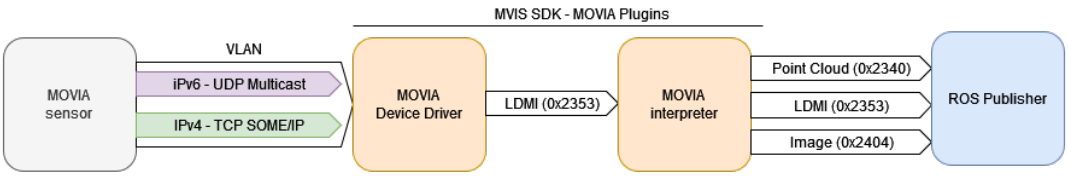

Figure 3.2: movia driver data flow

3.1 Build

With the build script you can build the node for your ROS version and platform. Only if using a not supported platform you have to build the ros nodes manually.

3.2 ROS

The **MOVIA** driver requires ROS and the ROS PCL installed. To learn how to build and launch ROS nodes please also refer to these tutorials: http://wiki.ros.org/ROS/Tutorials There is also an optional pcl2 filter nodeled, please

refer to http://wiki.ros.org/pcl_ros/

3.2.1 RViz visualisation

To visualize the PointCloud the RViz ROS visualization tool can be used. To start RViz in the second terminal window please proceed as follows (example for noetic):

```
source /opt/ros/noetic/setup.bash
rviz&
```

movia_driver package also contains prepared RViz configuration:

```
{YOUR_SDK_PATH}/mvis-movia-driver/src/movia/config/movia.rviz
```

Example of RViz output:

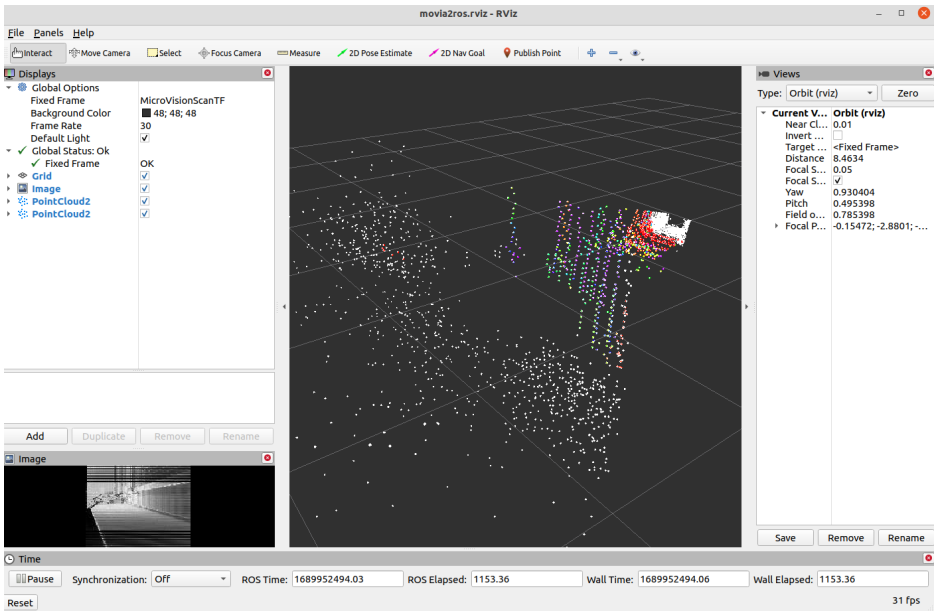

Figure 3.3: movia and RViz visualisation

3.3 ROS2

The **MOVIA** driver requires ROS2 installed. To learn how to build and launch ROS2 nodes please also refer to these tutorials for each distribution. As an example, here is a tutorial for Humble Hawksbill distribution: https://docs.ros.org/en/humble/Tutorials.html

3.3.1 RViz2 visualisation

To visualize the PointCloud the RViz2 ROS2 visualization tool can be used. To start RViz2 in the second terminal window please proceed as follows (example for humble):

```
source /opt/ros/humble/setup.bash
rviz2&
```

movia package also contains a prepared RViz2 configuration:

```
ros/src/movia/launch/movia.rviz
ros2/rviz_config/default.rviz
```

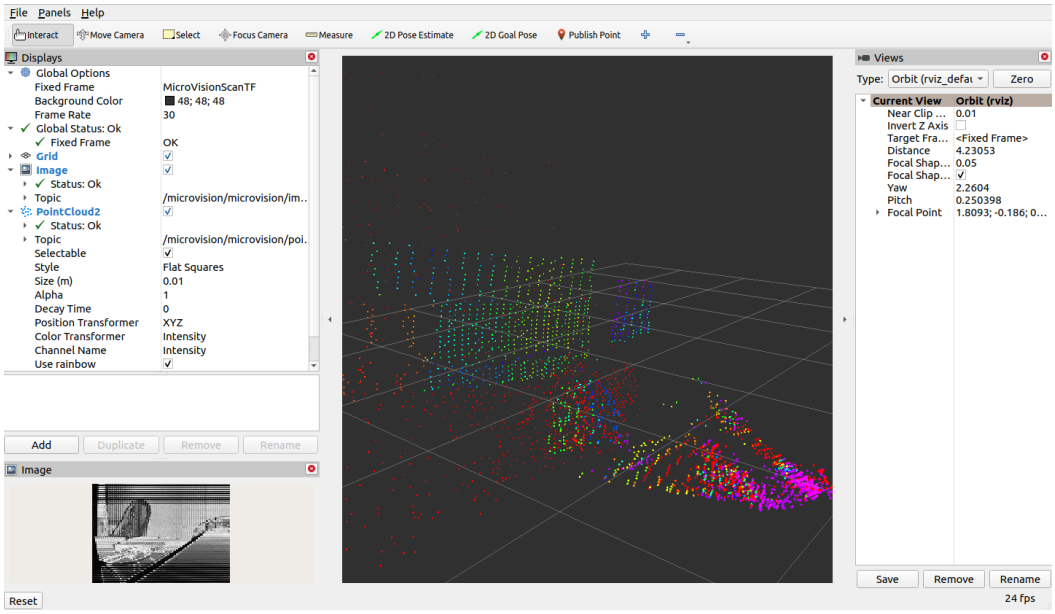

Figure 3.4: movia and RViz2 visualisation

3.4 Dependencies

While the mvis-ros-driver package comes with all the required binary dependencies for the supported platforms you may have to collect them for yourself when using other platforms. You may be unable to use the build scripts.

3.4.1 Required SDK plugins

For MOVIA sensor support, several plugins need to be loaded.

CAUTION

To use the MicroVision MOVIA Lidar sensor, the following plugins are required:

- *movia_interpreter-plugin*
- *movia_device-plugin* and
- *thirdparty_networkinterface-plugin*. (optional)

These plugins are contained in the MVIS SDK plugins download file which is available on the website separately.
Please have a look inside the plugin user manuals for more details!

3.4.2 Build SDK sources

Prerequisite for building the **movia_driver** packages is the built SDK version. Please build SDK sources as "release" configuration:

```
./build.sh -c Release
```

Please note the referred build.sh is the one in the MVIS C++ SDK.

3.5 Configure movia driver node

For most use cases you can simply use the run script with or without arguments.

3.5.1 Setup movia node configuration parameters

If you need to modify more parameters than available in the run script you can modify the movia.yaml configuration in install folder and adjust the values like scope_id, fov, etc.:

```
# MOVIA sensor hardware id (HWID printed on casing or "L" for MOVIA L)
hwid: "11" # or "L" for MOVIA L

# multicast ip address of sensor (with scope id if not MOVIA L)
multicast_ip: "ff02::1be0:1%8"

# remote ip address of sensor depending on vlan setup (not required for MOVIA L)
remote_ip: "172.16.101.56"

# Optional: Set to false to use local time of host otherwise sensor time is used
sensor_timesynced: false
```

A Troubleshooting

Please set the default log level to 'Debug' and read the messages carefully. Most likely some required library is not found!

CMake log Add –trace to build.bat catkin or colcon cmake-args to get more information about the build process. Also you can add -DCMAKE_MESSAGE_LOG_LEVEL=VERBOSE to get the full build output.

A.1 Retry build

Please delete the folders build, install, log in the ros and ros2 subdirectories before running build again. This is required when switching ros distribution or changing other build settings.

A.2 Windows

Requirements Boost and libjpeg-turbo may need to be installed on your system to build the nodes. See MVIS SDK documentation.

Debugging You can find information on debugging ROS nodes in the ROS documentation. We tested debugging with Visual Studio Code. Use a 'RelWithDebInfo' target platform.

A.2.1 Target Platform

It is important to use the same target platform for all libraries and your node. Please build the SDK for 'Release-shared' to avoid crashes in the ROS node. Use RelWithDebInfo for debugging. Make sure the MVIS SDK is built with the same settings!

cmake-args

When building your ROS or ROS2 node with 'catkin_make install' or 'colcon build' the target platform can be set by adding the cmake-args:

```
--cmake-args -DCMAKE_BUILD_TYPE=RelWithDebInfo
```

For more log output (check the CMAKE_PREFIX_PATH!) during the build adjust the log-level:

```
--log-level=VERBOSE
```